

## CLAIMS

We claim:

- 5           1.       A method for managing a battery system comprising:  
            using a solid state relay as a switch during an operation of said battery system.
2.       The method of claim 1 wherein said solid state relay is an optically  
isolated field-effect transistor.
- 10           3.       The method of claim 1 wherein said operation is a read and wherein said  
switch completes a circuit comprising:  
            a side of a battery cell; and  
            an input of a voltage differentiator.
- 15           4.       The method of claim 1 wherein said operation is a buck and wherein said  
switch completes a circuit comprising:  
            a first side of a battery cell;  
            a resistor; and  
20           a second side of a battery cell.
5.       The method of claim 1 wherein said operation is a boost and wherein said  
switch completes a circuit comprising:  
            a side of a battery cell; and  
25           a voltage source.

6. The method of claim 1 further comprising:  
controlling said battery system using a logic circuit.

5 7. The method of claim 1 further comprising:  
controlling said battery system using an EPROM.

8. The method of claim 1 further comprising:  
controlling said battery system using a programmable logic array.

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9. The method of claim 1 wherein a control circuit that controls said switch is  
protected from a higher voltage circuit wherein said switch is a component of said higher  
voltage circuit.

15 10. A method of managing a battery system comprising:  
providing a first rail; and  
providing a second rail;

11. The method of claim 10 further comprising:  
20 providing a first switch connected to a high line of said first rail;  
providing a second switch connected to a low line of said first rail;  
providing a third switch connected to a high line of said second rail; and  
providing a fourth switch connected to a low line of said second rail.

25 12. The method of claim 10 further comprising:

partitioning a first battery cell into a first battery group;  
partitioning a second battery cell into a second battery group wherein said second  
battery cell is in series with said first battery cell and wherein a first side of said first  
battery cell is electrically connected to a first side of said second battery cell; and  
5 accessing said first side of said first battery cell and a second side of said first  
battery cell using said first rail.

13. The method of claim 12 further comprising:  
accessing said first side of said second battery cell and a second side of said  
10 second battery cell using said second rail.

14. A method of managing a battery system comprising:  
partitioning a plurality of battery cells into a plurality of battery cell groups;  
controlling battery management functions of a first battery cell group using a  
15 battery management control module.

15. The method of claim 14 wherein said battery management control module  
is controlled by a 16-bit control input.

20 16. The method of claim 14 wherein said battery management control module  
is controlled by a 8-bit control input.

17. The method of claim 14 wherein four battery management control  
modules are used to control battery management functions of four battery cell groups.  
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18. The method of claim 14 wherein a first battery cell group has ten battery cells.

19. A battery management system comprising:  
5 a solid state relay configured to function as a switch during an operation of said battery management system.

20. The battery management system of claim 19 wherein said solid state relay is an optically isolated field-effect transistor.  
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21. The battery management system of claim 19 wherein said operation is a read and wherein said solid state relay completes a circuit comprising:  
a side of a battery cell; and  
an input of a voltage differentiator.

22. The battery management system of claim 19 wherein said operation is a buck and wherein said solid state relay completes a circuit comprising:  
a first side of a battery cell;  
a resistor; and  
15 a second side of a battery cell.  
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23. The battery management system of claim 19 wherein said operation is a boost and wherein said solid state relay completes a circuit comprising:  
a side of a battery cell; and  
25 a voltage source.

24. The battery management system of claim 19 further comprising:  
a logic circuit configured to control said battery management system.

5 25. The battery management system of claim 19 further comprising:  
an EPROM configured to control said battery management system.

26. The battery management system of claim 19 further comprising:  
a programmable logic array configured to control said battery management  
10 system.

27. The battery management system of claim 19 further comprising:  
a control circuit configured to control said solid state relay wherein said control  
circuit is protected from a higher voltage circuit and wherein said solid state relay is a  
15 component of said higher voltage circuit.

28. A battery management system comprising:  
a first rail; and  
a second rail;  
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29. The battery management system of claim 28 further comprising:  
a first switch connected to a high line of said first rail;  
a second switch connected to a low line of said first rail;  
a third switch connected to a high line of said second rail; and  
25 a fourth switch connected to a low line of said second rail.

30. The battery management system of claim 28 further comprising:  
a partitioning unit configured to partition a first battery cell into a first battery  
group wherein said partitioning unit is further configured to partition a second battery cell  
5 into a second battery group wherein said second battery cell is in series with said first  
battery cell and wherein a first side of said first battery cell is electrically connected to a  
first side of said second battery cell; and  
a control unit configured to access said first side of said first battery cell and a  
second side of said first battery cell using said first rail.

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31. The battery management system of claim 30 further comprising:  
a second control configured to access said first side of said second battery cell and  
a second side of said second battery cell using said second rail.

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32. A battery management system comprising:  
a partitioning unit configured to partition a plurality of battery cells into a plurality  
of battery cell groups;  
a control unit configured to control battery management functions of a first battery  
cell group using a battery management control module.

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33. The battery management system of claim 32 wherein said battery  
management control module is controlled by a 16-bit control input.

34. The battery management system of claim 32 wherein said battery  
25 management control module is controlled by a 8-bit control input.

35. The battery management system of claim 32 wherein four battery management control modules are used to control battery management functions of four battery cell groups.

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36. The battery management system of claim 32 wherein a first battery cell group has ten battery cells.

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